

# *Net1* Cas9-KO Strategy

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**Reviewer:**

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**Design Date:**

**2020/2/14**

# Project Overview

**Project Name**

*Net1*

**Project type**

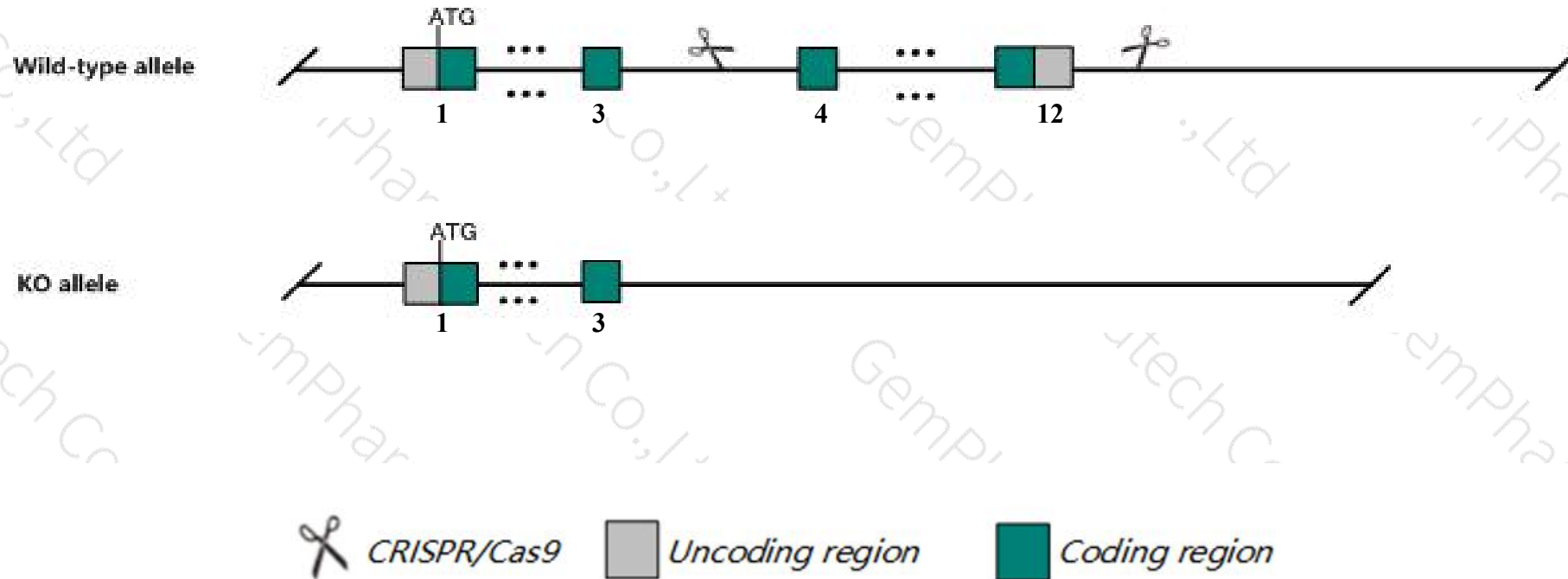
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Net1* gene. The schematic diagram is as follows:



- The *Net1* gene has 7 transcripts. According to the structure of *Net1* gene, exon4-exon12 of *Net1-201* (ENSMUST00000091853.11) transcript is recommended as the knockout region. The region contains most of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Net1* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit delayed mammary gland development during puberty associated with slower ductal extension, reduced ductal branching and epithelial cell proliferation, disorganized myoepithelial and ductal epithelial cells, and increased collagen deposition.
- Transcript *Net1-207* may not be affected.
- The *Net1* gene is located on the Chr13. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



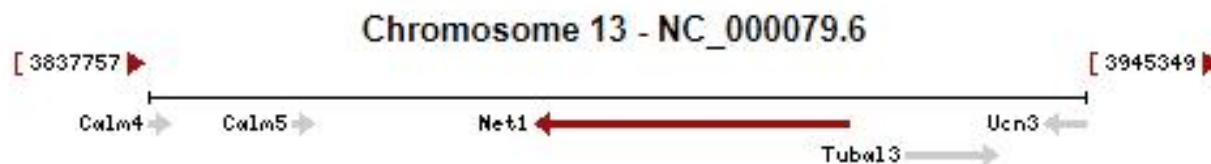
# Gene information (NCBI)

## Net1 neuroepithelial cell transforming gene 1 [ *Mus musculus* (house mouse) ]

Gene ID: 56349, updated on 12-Nov-2019

### Summary

Official Symbol	Net1 provided by <a href="#">MGI</a>
Official Full Name	neuroepithelial cell transforming gene 1 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1927138</a>
See related	<a href="#">Ensembl:ENSMUSG00000021215</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Net1a; mNET1
Expression	Ubiquitous expression in large intestine adult (RPKM 25.9), limb E14.5 (RPKM 18.9) and 28 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

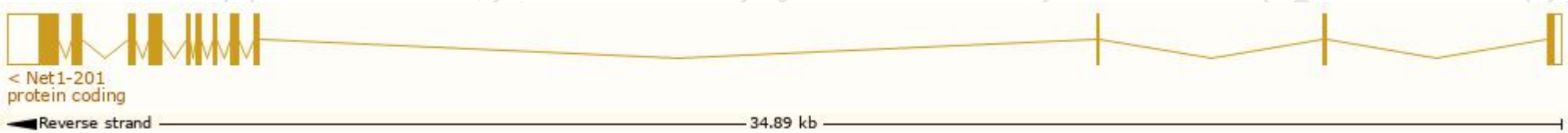


# Transcript information (Ensembl)

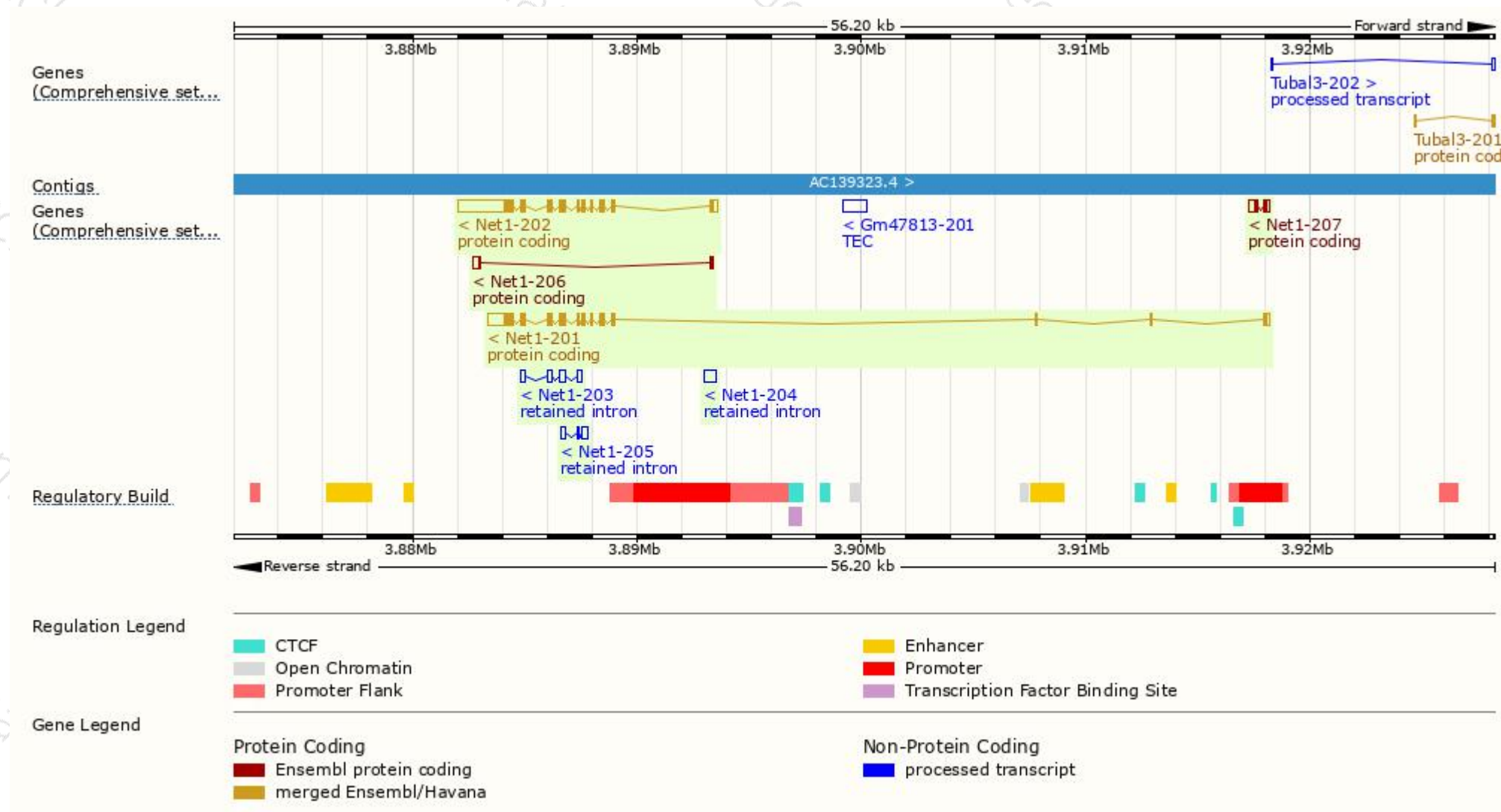
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Net1-202	<a href="#">ENSMUST00000099946.5</a>	3871	<a href="#">541aa</a>	Protein coding	<a href="#">CCDS36583</a>	<a href="#">Q3USZ7</a> <a href="#">Q9Z206</a>	TSL:1 GENCODE basic APPRIS ALT2
Net1-201	<a href="#">ENSMUST00000091853.11</a>	2680	<a href="#">595aa</a>	Protein coding	<a href="#">CCDS26216</a>	<a href="#">Q9Z206</a>	TSL:1 GENCODE basic APPRIS P3
Net1-207	<a href="#">ENSMUST00000223258.1</a>	597	<a href="#">72aa</a>	Protein coding	-	<a href="#">A0A1Y7VJ80</a>	TSL:1 GENCODE basic
Net1-206	<a href="#">ENSMUST00000222504.1</a>	447	<a href="#">44aa</a>	Protein coding	-	<a href="#">A0A1Y7VKV6</a>	TSL:3 GENCODE basic
Net1-203	<a href="#">ENSMUST00000220887.1</a>	763	No protein	Retained intron	-	-	TSL:5
Net1-204	<a href="#">ENSMUST00000222017.1</a>	569	No protein	Retained intron	-	-	TSL:NA
Net1-205	<a href="#">ENSMUST00000222442.1</a>	519	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Net1-201* transcript,The transcription is shown below

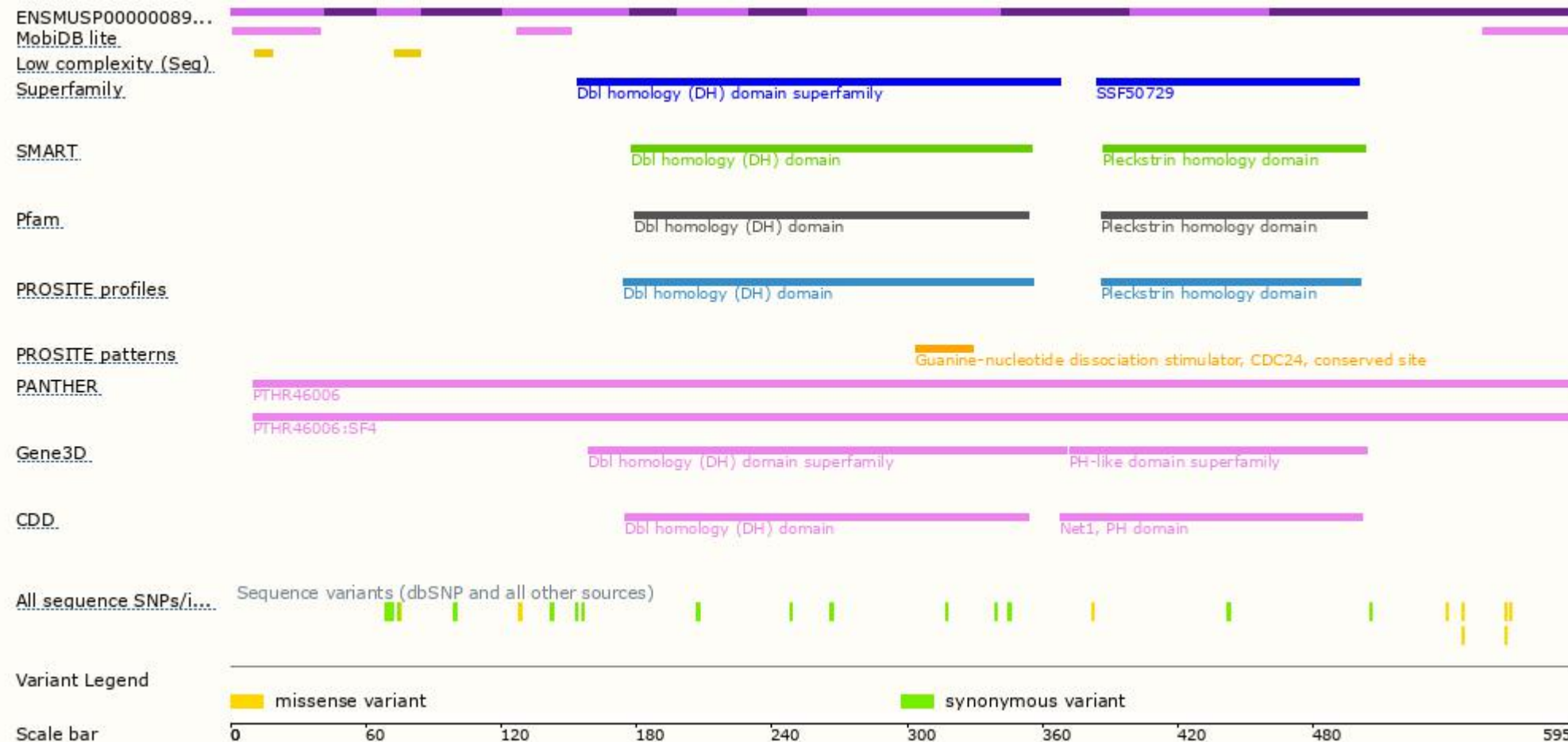


# Genomic location distribution

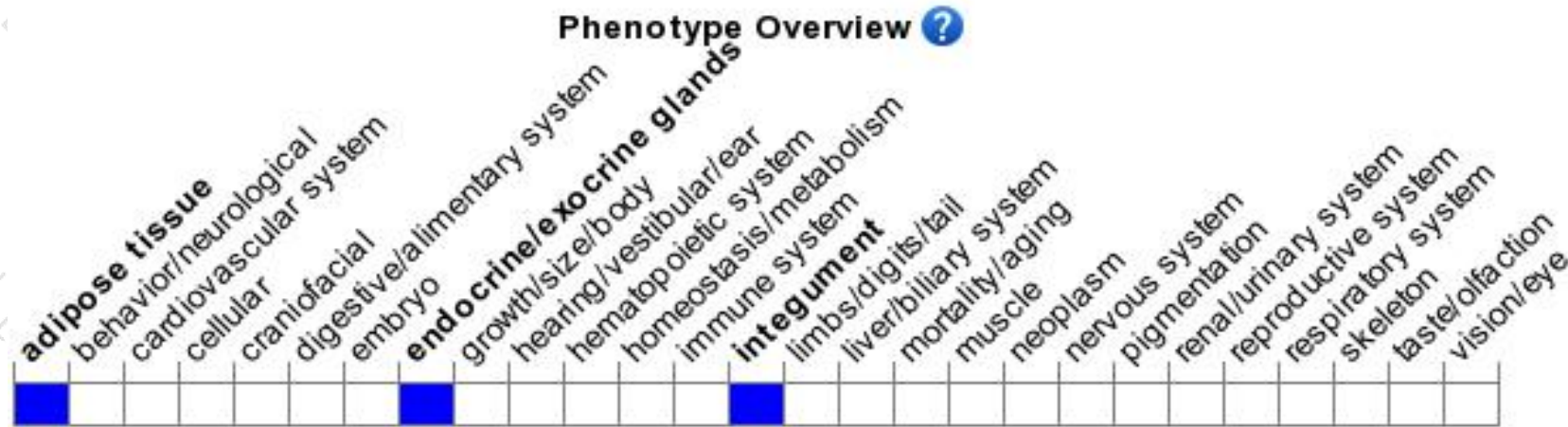




# Protein domain



# Mouse phenotype description(MGI)



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

According to the existing MGI data, Mice homozygous for a knock-out allele exhibit delayed mammary gland development during puberty associated with slower ductal extension, reduced ductal branching and epithelial cell proliferation, disorganized myoepithelial and ductal epithelial cells, and increased collagen deposition.

If you have any questions, you are welcome to inquire.

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